

**Notice of Allowability****Application No.**

10/510,479

**Applicant(s)**

MATSUO ET AL.

**Examiner**

RAKESH K. DHINGRA

**Art Unit**

1792

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment dated 6/19/08 to Non-final Office Action.
2. ☒ The allowed claim(s) is/are 7-13.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 9/16/08.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_.

/Rakesh K Dhingra/  
Examiner, Art Unit 1792

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Stephen A. Soffen on 9/16/08.

The application has been amended as follows:

In the Claims:

7 (Currently Amended) An ECR plasma source comprising:

a microwave source;

a microwave ~~inducing~~ introducing means connected to the microwave source;

a microwave transmitting means connected to the microwave introducing means;

a plasma generating chamber connected to the microwave transmitting means; and

at least one magnetic generation means having magnetic coils wound around the plasma

generating chamber for generating the electronic cyclotron resonance (ECR) plasma and a

plasma flow drawn from an opening of the plasma generating chamber, wherein,

the plasma generating chamber has generally rectangular sectional shapes,

the magnetic coils of the magnetic generation means are wound in generally rectangular shapes

normal to the direction of the plasma flow,

the microwave introducing means includes a straight shape microwave cavity resonator which is terminated on one end portion of the straight shape microwave cavity resonator with a metal plate to form a terminal end portion having no opening, the other end portion of the straight shape microwave cavity resonator having a first opening formed by inserting a metal plate slit into the other end portion, the end portion having the first opening is connected to the microwave source through a part of the microwave introducing means, the straight shape microwave cavity resonator has a terminal end portion having no opening and an end portion having the first opening disposed at a distance of  $n \times (\lambda_g/2)$  ( $n$ : an integer of 3 or more,  $\lambda_g$ : guide wavelength) from the terminal end portion, and in the straight shape microwave cavity resonator, first resonance units having a length  $\lambda_g/2$ , but not having openings in a side, and second resonance units having a length of  $\lambda_g/2$  and having at least one second opening in a side, are alternately arranged sequentially from the terminal end portion, two or more second resonance units being disposed in the straight shape microwave cavity resonator, and microwaves in phase from the second openings are introduced into the plasma chamber through the microwave transmitting means.

***Allowable Subject Matter***

Claims 7-13 allowed.

**Reasons for Allowance**

The following is an examiner's statement of reasons for allowance:

Claim 7 – Closest prior arts (Kou et al – US 6,246,175 and Kamarchi et al – US 5,961,875) do not teach claim limitations “the magnetic coils of the magnetic generation means are wound in generally rectangular shapes normal to the direction of the plasma flow, the microwave introducing means includes a straight shape microwave cavity resonator which is terminated on one end portion of the straight shape microwave cavity resonator with a metal plate to form a terminal end portion having no opening, the other end portion of the straight shape microwave cavity resonator having a first opening formed by inserting a metal plate slit into the other end portion, the end portion having the first opening is connected to the microwave source through a part of the microwave introducing means, the straight shape microwave cavity resonator has a terminal end portion having no opening and an end portion having the first opening disposed at a distance of  $n \times (\lambda_g/2)$  ( $n$ : an integer of 3 or more,  $\lambda_g$ : guide wavelength) from the terminal end portion, and in the straight shape microwave cavity resonator, first resonance units having a length  $\lambda_g/2$ , but not having openings in a side, and second resonance units having a length of  $\lambda_g/2$  and having at least one second opening in a side, are alternately arranged sequentially from the terminal end portion, two or more second resonance units being disposed in the straight shape microwave cavity resonator, and microwaves in phase from the second openings are introduced into the plasma chamber through the microwave transmitting means” in the context of remaining limitations of the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAKESH K. DHINGRA whose telephone number is (571)272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rakesh K Dhingra/  
Examiner, Art Unit 1792

/Parviz Hassanzadeh/  
Supervisory Patent Examiner, Art Unit 1792